
TAKE A SIP OF PURE
COMPLIANCE
Drinking Water Analysis Solutions
JCANO®
INGENIERÍA DE MÉXICO
Equipo de Laboratorio, Mantenimiento, Capacitación y CRM personalizado
PerkinElmer®
For the Better

BE READY FOR EVERY CHALLENGE – EVEN THE UNEXPECTED

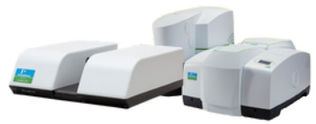
Clean drinking water is essential to life – and it's everyone's right. That's why governments, contract testing labs, state-run utilities, and bottled water manufacturers are increasingly tasked with testing higher volumes of samples, time-sensitive assays, even the unexpected emergency – all while adhering to strict and often-changing regulations.

Drinking water analysis starts with confidence – and our established workflow solutions ensure you get accurate, timely results, day after day. And with faster turnarounds – and lab technician turnover – adding to your challenges, these simple, effective solutions instill a high level of confidence in your lab and help ensure your communities' water supplies are safe and unadulterated.

For detection of trace elements, volatiles and semivolatiles, microplastics, and other contaminants in drinking and bottled water, we deliver a portfolio of pioneering, innovative ICP-MS, GC/MS, UV/Vis, FT-IR, LC/MS/MS, LSC, and other systems, plus automation, consumables, and world-class service and support.

NexION® ICP-MS Family

Clarus® SQ 8 GC/MS with Sample Handling Options



LAMBDA™ UV/Vis Family and Spotlight™ FT-IR Imaging Systems

QSight® Triple Quad LC/MS/MS and Flexar™ UHPLC

Quantulus™ GCT Liquid Scintillation Counter

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ADDRESSING WATER POLLUTION: AN OVERVIEW

From inscriptions found in ancient Egyptian tombs, we know that treatment of water for drinking dates back nearly 4,000 years. But it wasn't until the mid-1800s that we connected water quality with human health, driving the first regulation of drinking water, London's Metropolitan Water Act of 1852. In 1948, the Federal Water Pollution Control Act was authorized in the U.S., and drinking water contaminants (and regulations) have grown exponentially since then. At the same time, detection levels and turnaround times have become ever stricter.

Contract testing laboratories, businesses, and governmental agencies are challenged with maintaining compliance with evolving regulations, technologies, and methods. We're empowering this critical analysis, and our expertise positions us at the forefront of drinking water testing as a trusted provider.

- Our instrumentation and solutions test 289 billion gallons of water a year worldwide to provide safe drinking water for a billion people
- Our ICP-MS platforms are the systems of choice for testing trace metals in drinking water, installed in more than 70% of U.S. water testing labs
- For more than 50 years, we've collaborated with academia and worked with global regulatory bodies to pioneer testing solutions for emerging pollutants
- We offer turnkey, stay-clean solutions with the information and reports required for regulatory agencies

Analysis of Trace Elements

Our drinking water comes from a variety of sources – predominantly rivers, lakes, and groundwater. And around the world, there are standards and regulations for metal concentrations in these sources, driven by various factors such as health and safety concerns and geologic and geographic considerations – which make it impossible to set global regulations for water quality. ICP-MS has emerged as the technique of choice for trace metal analysis.

Unlike other systems, our **NexION 1000 ICP-MS** performs these assays with a single gas – an approach that delivers high productivity while meeting the low detection limits required by U.S. EPA and other regulatory bodies. It's perfect for analyzing trace concentrations of lead and copper with MDLs lower than 10 parts per trillion – making it sensitive enough for laboratories of any size, anywhere.

What's more, our **NexION 2000 ICP-MS** provides a comprehensive solution for running EPA Method 200.8, the standard adopted by much of the world for trace elemental analysis of water, as well as ISO 17294-2.

Read more about our NexION ICP-MS

Read about our ICP-OES solution for EPA Method 200.7

Read about our AA solution for EPA Method 200.9

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Analysis of Volatile Organic Compounds

When optimizing throughput is key, you can trust us for your most critical volatile organic compound (VOC) requirements. Our **Clarus SQ 8 GC/MS** systems outperform regulatory method criteria, and their stability helps keep you passing quality-control samples and maximizing instrument uptime, while ensuring ultratrace-level detection limits.

We stay current with applications and guidance for routine and emerging contaminants in drinking water, delivering solutions for BTEX, fuel oxygenates, and disinfection byproducts, as well as for 1,4 dioxane and industrial solvents. Working together, we help you remain agile in an everchanging regulatory climate.

We also offer the fastest turnkey solutions for purge-and-trap VOC extraction techniques, compliant with U.S. EPA regulations. When headspace is an approved approach to VOC analysis, our robust **TurboMatrix™ Headspace Trap** sampler allows for maximized throughput. Whichever autosampler technique you choose, you can count on us to help you meet production and ROI target goals.

Read more about the Clarus SQ 8 GC/MS with sample handling options

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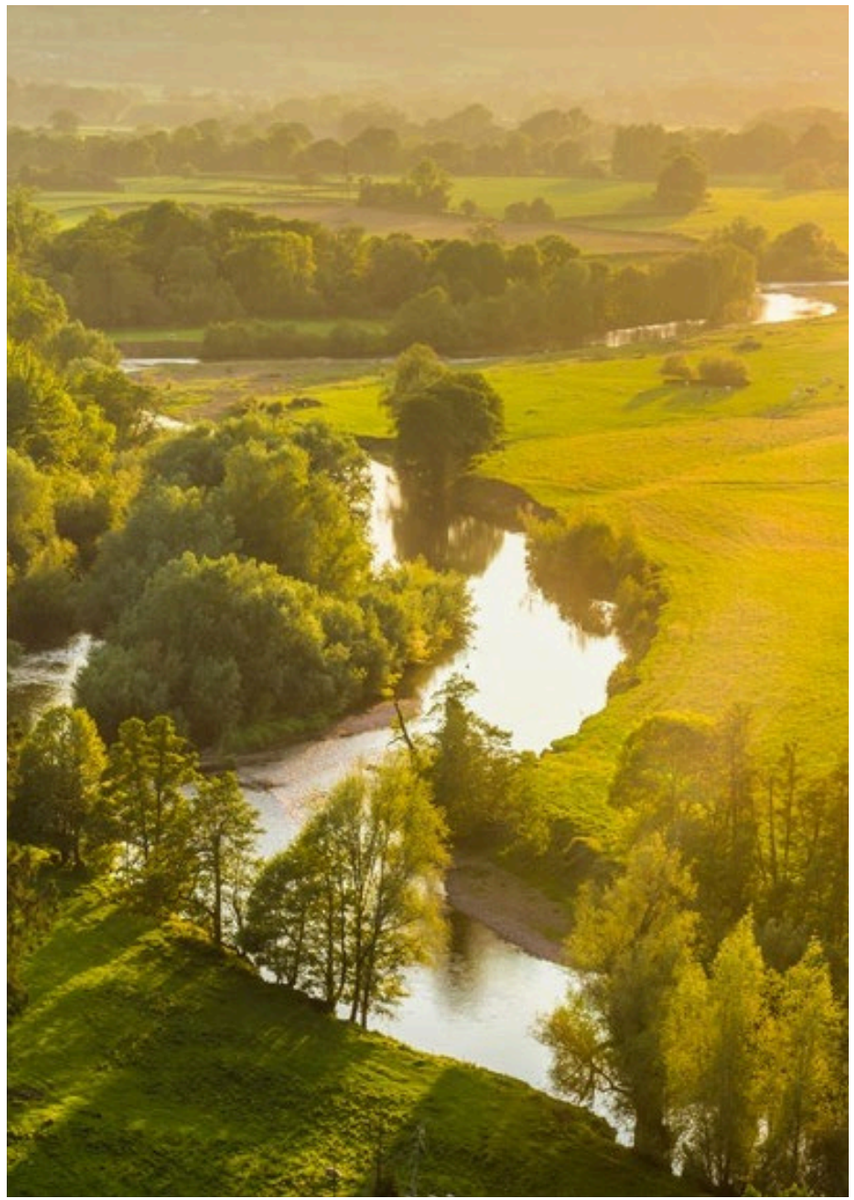

Analysis of Semivolatile Compounds

About 90% of all drinking water comes from surface and groundwater sources such as rivers, lakes, and streams. These water sources are susceptible to pollution by semivolatile compounds (SVOCs), polynuclear aromatic hydrocarbons (PAHs), herbicides and pesticides used in industry and agriculture.

Reliable ultratrace-level detection is essential to ensuring that drinking water sources meet regulatory requirements. **Clarus 590/690 GC** instruments with our robust liquid autosampler are the ideal solution for the determination of PAHs, PCBs, and pesticides and offer enhanced instrument uptime. For high-quality herbicide analysis, our **Flexar UHPLC** is equipped with a photodiode array detector to maximize throughput and reduce testing time and solvent usage.

Read more about the Clarus 690 GC

Read more about the Flexar UHPLC

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Helping One Colorado Community Test Better

The ninth most populated county in Colorado, Weld County, takes its water purity seriously. That's why the county's public health laboratory, in conjunction with its Environmental Health and Public Health Education divisions, partnered with us in support of a variety of analytical testing programs. The lab currently holds nearly 50 drinking water and wastewater contracts for cities inside and outside the county and conducts bacteriological and chemical GC/MS drinking water compliance testing for other counties.

The partnership was rolled out in three phases:

Phase One dealt with the impact of hydraulic fracturing, or "fracking," on well water, using our TurboMatrix Headspace and Clarus GC/FID systems. The county invested in a Clarus GC/MS turnkey solution with purge-and-trap technology to run EPA Method 524.2, testing for 59 VOCs.

Phase Two involved developing a new method for measurements of hydrocarbon gases, including methane, in drinking water, using a TurboMatrix Headspace coupled with a GC, in compliance with EPA Method RSK-175 regulations. Phase Three provided a method for determination of Haloacetic acids (HAAs), formed when chlorine or other disinfectants react with organic or inorganic matter in water. Together, these systems and methods help keep Weld County residents – and their drinking water – safer than before.

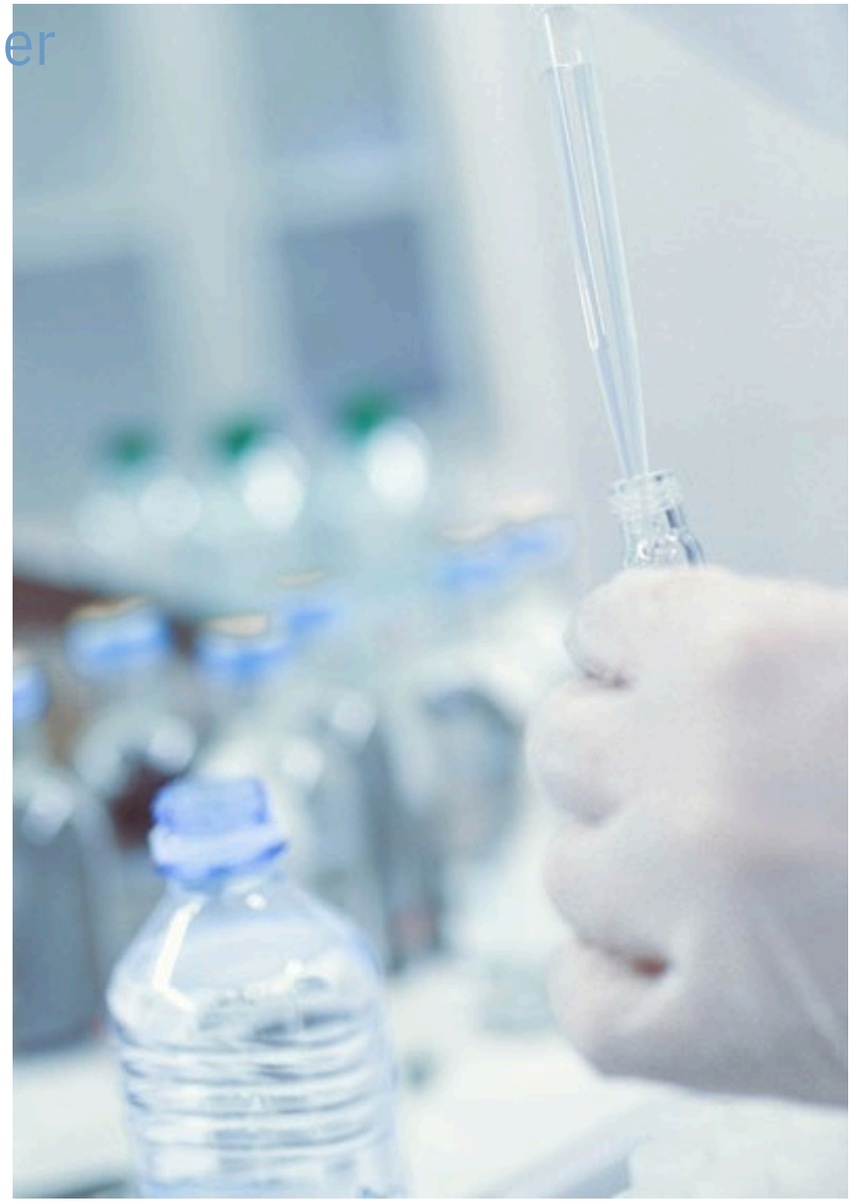
Mark Thomas, a chemist with Weld County's Department of Public Health and Environment, running the Clarus GC/MS.

Analysis of Microplastics in Bottled Water

Although bottled water can be a great alternative to drinking tap water, single-use plastic bottles can impact the environment adversely in two ways: as intact bottles that take years to degrade, or as secondary microplastics when they eventually break down.

What's more, microplastics have been detected in the water itself. So scientists are using our **Spotlight 400 FT-IR** imaging system to detect and identify microplastics in bottled water. And there's plenty to find: microplastics are in nearly all water bottles in sizes ranging from 20 microns to 200 microns, with some fibers longer than two millimeters. Getting a handle on the microplastics problem enables manufacturers to begin abatement through additional filtration measures. In addition, this research is contributing to our understanding of the health risks of microplastics to the general population.

Read more about the Spotlight™ 400 FT-IR

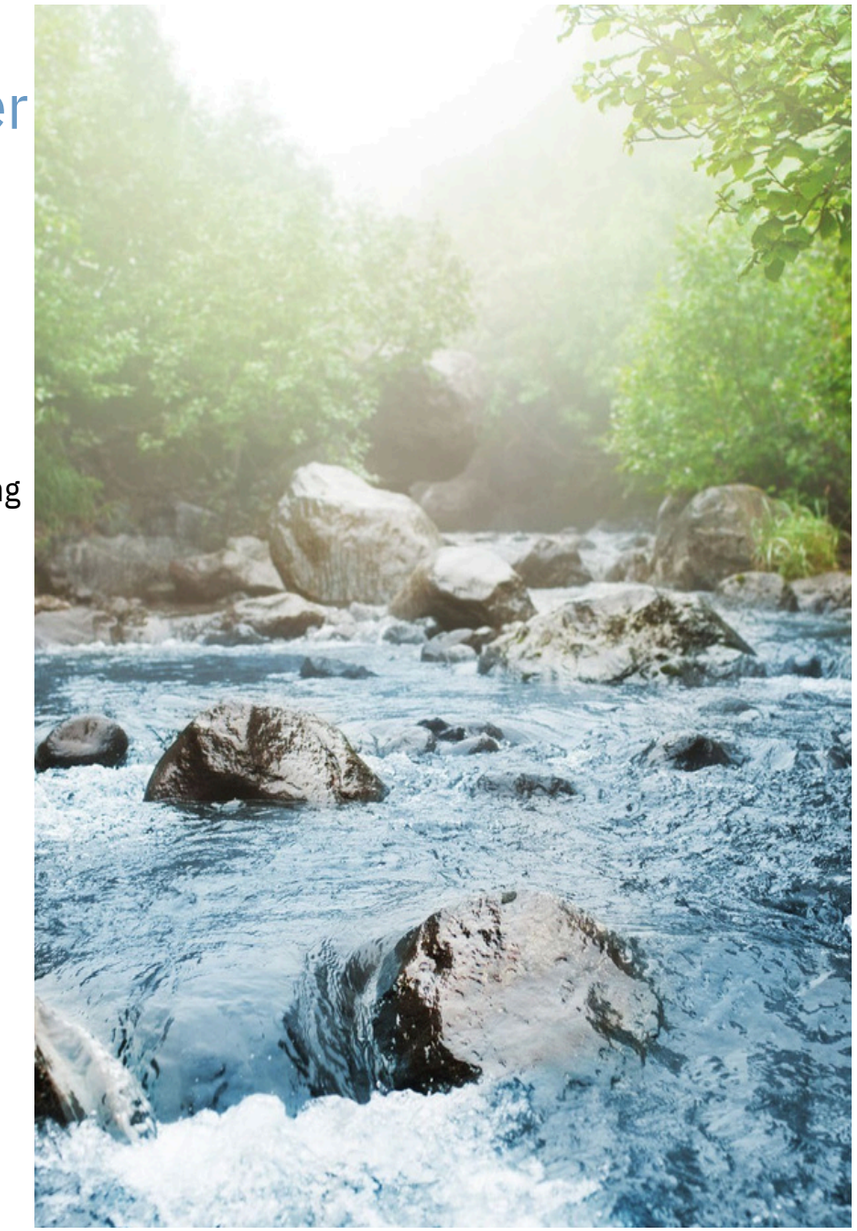


Analysis of Pharmaceuticals and Personal Care Products (PPCPs) in Water

What are the “emerging” pathogens and contaminants finding their way into our water supply? They’re the pharmaceuticals and personal care products we use every day – steroids, antibiotics, nonprescription and veterinary drugs, perfumes, sunscreens, and more, coming from sewer treatment plants, agricultural runoff, and individual septic systems.

PPCPs encompass a wide variety of chemical classes and types and can present at parts per trillion concentrations in surface waters. So developing an optimal analytical method that provides effective chromatographic separation and analyte sensitivity is a daunting task. Our **QSight LC/MS/MS,** coupled with the **QSight LX50 UHPLC,** is perfectly suited for the separation, detection and quantitation of up to 31 PPCPs in river waters – a fast, reliable direct-injection PPCP analysis in under six minutes, with a sample turnaround time of 11 minutes and LOQs at low parts-per-trillion levels for most analytes.

Read more about the QSight LC/MS/MS



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Analysis of Radioactivity in Water

Minute traces of radioactivity are normally found in all drinking water, though the concentration and composition of these radioactive elements vary regionally. Globally, there are multitudes of regulations in place that set the maximum safe ultratrace-levels of radioactivity based on different measurements. Our **Quantulus GCT** liquid scintillation counter is the ideal system to test for alpha (α), beta (β), tritium (3H), and radon-222 (222Rn) total activity in water samples taken from a water reservoir, tap water, or other source such as bottled water, to ensure consumer safety.

Read more about the Quantulus GCT

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ICP-MS for Drinking Water Analysis

Find out more about ICP-MS drinking water applications

NexION 1000 ICP-MS

In the high-pressure world of environmental testing labs, quick turnaround is key – and our **NexION 1000 ICP-MS** is the ideal high-through-put system for running multielemental, trace- and ultratrace-level environmental analysis, quickly and affordably. Exclusive Universal Cell Technology™ makes single-gas switching simple, while Extended Dynamic Range measures major and trace elements in the same sample in a single run. And its Triple Cone Interface and Quadrupole Ion Deflector technologies make operation – and cleanup – a breeze. Put all that together with preset methods in our rugged, powerful Syngistix™ software, and you have everything you need to meet productivity goals and stringent regulatory requirements, and a remarkably low cost per sample.

GC/MS for Drinking Water Analysis

Find out more about GC/MS drinking water applications

Clarus SQ 8 GC/MS with Sample Handling

With a new inert capillary injector for greater sensitivity and efficiency and a flame ionization detector for more accurate quantitation, our **Clarus SQ 8 GC/MS** and sampling handling options, such as a headspace or purge and trap sampler, deliver all the powerful and popular features and functionality you've come to rely on – perfect for identification and quantitation of volatile and semivolatile compounds. And it's designed to deliver high throughput, rugged dependability, and great results. Plus, with our patented SMARTsource™ (for both EI and CI), maintenance is easy.

FT-IR and UV/Vis for Drinking Water Analysis

Spotlight 400 FT-IR

Find more about FT-IR drinking water applications

IR microscopy is an excellent analytical technique for detection of microplastics in a variety of drinking water sources, including bottled water. Our **Spotlight 400 FT-IR** imaging system delivers intelligent automation and sophisticated analysis, plus an imaging system that collects high-resolution infrared images of extremely small samples.

LAMBDA 265/365 UV/Vis

Find out more about UV/Vis drinking water applications

Our **LAMBDA 265 UV/Vis** spectrophotometer is the perfect solution for a whole range of water analysis challenges, such as the determination of nitrates, orthophosphate, and iron, using a variety of methods, including the ascorbic acid method for iron and the brucine method for nitrate-nitrogen. The **LAMBDA 365 UV/Vis** is the ideal choice when increased performance and sensitivity are required. Either way, there's no better solution for accuracy, repeatability, and fast acquisition of spectra and results than the LAMBDA family of spectrophotometers.

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SEMIVOLATILE COMPOUNDS
MICROPLASTICS
PPCPs
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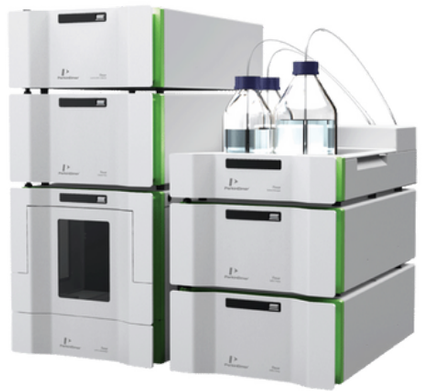
CONTACT US

LC/MS/MS, UHPLC for Drinking Water Analysis

QSight LC/MS/MS

Find out more about LC/MS/MS drinking water applications

Combining the separation capabilities of liquid chromatography with the mass analysis features of mass spectrometry, our **QSight LC/MS/MS** is perfect for confirming the presence of chemical constituents in water at parts-per-million concentrations – and especially for PPCPs as well as determination of haloaceteic acids (HAAs). Traditional GC technology entailed laborious preparation steps such as liquid-liquid extraction and derivatization. The QSight system allows for direct sample injection with little or no sample prep, for better separations and sensitivity – and vastly improved lab productivity.



Flexar UHPLC

Find out more about UHPLC drinking water applications

Our **Flexar UHPLC** is the ideal system for routine analysis, especially well suited to detection of compounds such as herbicides in drinking water. It streamlines your processes, delivering efficient operation and reliable results. And for more demanding applications in high-productivity environments, the system provides all the sensitivity and resolution you need, with exceptional flow accuracy.

Radiometric Detection for Drinking Water Analysis

Find out more about LSC drinking water applications

Quantulus GCT

When it comes to monitoring radioactivity in our drinking water, it's critical that we be confident in our measurements. Our **Quantulus GCT** liquid scintillation counter has ultralow-level sensitivity, high sample capacity, and an α/β dual discriminator. Patented Bismut Germanium Oxide (BGO) and Guard Compensation Technology (GCT) allow the Quanutus GCT to accurately measure down to near-background levels in a lighter benchtop footprint that fits any lab. In addition to extremely high sensitivity, the system also offers unmatched detection of low-level alpha (α), beta (β), radioactivity.

Plus, the Quantulus GCT allows you to calculate total activity for alpha (α), beta (β), tritium (3H), and radon-222 (222Rn). Combine this with our scintillation cocktails and consumables, and you have everything you need to keep drinking water safe from harmful radioactivity.

OneSource Laboratory Services

With today's complex and ever-changing regulatory landscape, every lab function must work together toward the goal of a cleaner, safer water supply. And that's the aim of OneSource® Laboratory Services, too. We deliver solutions that cover all aspects of scientific lab operations and can be customized for the scientific workflows – and the water quality – you're driving toward.

OneSource is the one service organization with the understanding of lab and R&D needs, delivering a customized systems approach to your success. With insights and expertise, our consultants pinpoint the issues and inefficiencies and engineer the right solutions to solve your challenges. From everyday instrument repair and service to compliance and validation, from laboratory IT service to consulting and scientific staffing, OneSource Laboratory Services can help streamline your lab routines and get your people back to their main order of business – science.

OneSource® Laboratory Services

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Trust the Consumables Engineered for Your Instruments

We provide you with a comprehensive portfolio of consumables and accessories to support your analytical methods. Labs that perform environmental testing need to analyze increasingly more complex samples under tighter regulatory standards. We have the right consumables for your applications across widely used techniques for drinking water analysis.

Find out more about our leading consumables

Atomic Spectroscopy

Chromatography

Molecular Spectroscopy

For more information on our drinking water analysis solutions visit www.perkinelmer.com/water

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